Notice of Allowability	Application No.	Applicant(s)	
	10/776,248	OTSUKI ET AL.	
	Examiner	Art Unit	
	Zoila E. Cabrera	2125	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *6/26/07*.

2. ☒ The allowed claim(s) is/are *13-15*.

3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All b) ☐ Some* c) ☐ None of the:
      1. ☒ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Aaron C. Walker on July 6, 2007.

Claim 15, line 7, after "coordinate system" insert - - by an amount - -.

Claim 15, line 15, after "tool head" insert - - by an amount - -.

Allowable Subject Matter

2. Claims 13-15 are allowed.

The following is an examiner's statement of reasons for allowance: The allowability of the claims resides, at least in part, that the closest prior art of record **Coleman et al. (US 6,909,517)** does not disclose or suggest, alone or in combination the step of:

As for independent claim 13, rotating said first actual tool length vector by an amount in correspondence with an instruction for the second axis of rotation, by multiplying the first actual tool length vector by a transformation matrix that is made from a reference position at which there is no mechanical error in the second axis of rotation, an amount of misalignment of an actual second axis of rotation from the reference

position, and an instruction position for the second axis of rotation, thereby obtaining a second actual tool length vector for which the misalignment of the second axis of rotation has been corrected; rotating said second actual tool length vector by an amount in correspondence with an instruction for the first axis of rotation, by multiplying the second actual tool length vector by a transformation matrix that is made from a reference position at which there is no mechanical error in the first axis of rotation, an amount of misalignment of the actual second axis of rotation and an actual first axis of rotation, an amount of misalignment of the actual first axis of rotation from the reference position of the first axis of rotation, and an instruction position for the first axis of rotation, thereby obtaining a third actual tool length vector for which the misalignment of the first axis of rotation has been corrected; adding an instruction position vector and workpiece origin offset vector to the third actual tool length vector to obtain a machine position; and driving the axes of linear motion and the first axis of rotation and the second axis of rotation to the machine position thus obtained, in combination with the other elements and features of the claimed invention.

As for independent claim 14, rotating the instruction position in the machine coordinate system by an amount in correspondence with an instruction for the second axis of rotation, by multiplying a vector of the instruction position in the machine coordinate system by a transformation matrix that is made from a reference position at which there is no mechanical error in the second axis of rotation, an amount of misalignment of an actual second axis of rotation from the reference position, and an instruction position for the second axis of rotation, thereby obtaining a rotational position

of the second axis of rotation for which the misalignment of the second axis of rotation has been corrected; rotating the rotational position of the second axis of rotation by an amount in correspondence with an instruction for the first axis of rotation, by multiplying a vector of the rotational position of the second axis of rotation by a transformation matrix that is made from a reference position at which there is no mechanical error in the first axis of rotation, an amount of misalignment of an actual first axis of rotation from the reference position, and an instruction position for the first axis of rotation, thereby obtaining a rotational position of the first axis of rotation for which the misalignment of the first axis of rotation has been corrected; adding a tool length vector to the rotational position of the first axis of rotation to obtain a machine position; and driving the axes of linear motion and the first axis of rotation and the second axis of rotation to the machine position thus obtained, in combination with the other elements and features of the claimed invention.

As for independent claim 15, rotating the instruction position in the machine coordinate system by an amount in correspondence with an instruction for the axis of rotation for the table, by multiplying a vector of the instruction position in the machine coordinate system by a transformation matrix that is made from a reference position at which there is no mechanical error in the axis of rotation for the table, an amount of misalignment of an actual axis of rotation for the table from the reference position, and an instruction position for the axis of rotation for the table, thereby obtaining a rotational position of the axis of rotation for the table for which the misalignment of the axis of rotation for the table has been corrected; rotating a tool length vector of the tool head by

an amount in correspondence with an instruction for the axis of rotation for the tool head, by multiplying the tool length vector by a transformation matrix that is made from a reference position at which there is no mechanical error in the axis of rotation for the tool head, an amount of misalignment of an actual axis of rotation for the tool head from the reference position, and an instruction position for the axis of rotation for the tool head, thereby obtaining a rotational position of the axis of rotation for the tool head for which the misalignment of the axis of rotation for the tool head has been corrected; obtaining a machine position in accordance with the rotational position of the axis of rotation for the table and the rotational position of the axis of rotation for the tool head; and driving the axes of linear motion and the at least one axis of rotation for the tool head and the at least one axis of rotation for the table to the machine position thus obtained, in combination with the other elements and features of the claimed invention.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zoila E. Cabrera whose telephone number is 571-272-

3738. The examiner can normally be reached on M-F from 8:00 a.m. to 5:30 p.m. EST (every other Friday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard, can be reached on (571) 272-3749. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-9600.

Zoila Cabrera
Primary Examiner
July 6, 2007

ZOILA CABRERA
PRIMARY EXAMINER
TECHNOLOGY CENTER 2100

7/6/07